

Amendments to the Claims

1. **(Currently Amended)** A polygon rendering device, comprising:

a polygon division section for generating, based on polygon data which specifies a polygon to be rendered, a plurality of partial polygon data each specifying one piece of partial polygons which are obtained by dividing the polygon; and

a partial polygon rendering section for performing a rendering process, and based on the partial polygon data generated by said polygon division section, generating image data which represents an image of the polygon, wherein

each of ~~said the~~ partial polygons includes ~~include~~ a plurality of triangles which respectively include a vertex of ~~said the~~ polygon, and

each of the triangles shares at least one edge with any at least ~~any~~ one of the triangles other triangle included in the same partial polygon.

2. **(Currently Amended)** The polygon rendering device according to claim 1, wherein

~~said the~~ polygon data includes a set of coordinates for specifying ~~said the~~ polygon,

the polygon rendering device further comprises an unwanted point elimination section for applying an elimination process to ~~said the~~ polygon data ~~is further comprised~~ to generate new polygon data from which any unwanted set of coordinates is eliminated, and

said polygon division section generates ~~said the~~ partial polygon data in accordance with the new polygon data which is obtained by ~~the~~ said unwanted point elimination section.

3. **(Currently Amended)** The polygon rendering device according to claim 1, further comprising a concave polygon determination section for determining whether or not ~~said the~~ polygon data specifies a concave polygon, wherein

said polygon division section generates ~~said the~~ partial polygon data based on the polygon data which is determined as specifying the concave polygon by said polygon division section.

4. (Currently Amended) The polygon rendering device according to claim 1, wherein said partial polygon rendering section performs a perspective projection transformation process based on the partial polygon data generated by said polygon division section, and generates the image data which represents the image of ~~said~~ the polygon viewed from a predetermined viewpoint.

5. (Currently Amended) The polygon rendering device according to claim 1, wherein said the polygon data includes n sets of vertex coordinates P1 to Pn of ~~said the~~ the polygon in such an order that the polygon can be rendered in one stroke in a forward direction,

said polygon division section

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selects one of the vertex coordinates P1 to Pn of ~~said the~~ the polygon data as a reference vertex Pb (b=1, 2, ..., n), and in ~~said the~~ the forward direction, selects a vertex Pc ~~positioning~~ positioned adjacent to the reference vertex Pb and a vertex P(c+1) ~~positioning~~ positioned adjacent to the vertex Pc, and a triangle $\triangle Pb Pc P(c+1)$ formed by the reference vertex Pb, and the vertexes Pc and P(c+1) carries, in and on, no other vertex Pi (i = 1, 2, ..., n, and $i \neq b, i \neq c, i \neq c+1$) belonging to ~~said the~~ the polygon and not yet selected, and an angle $\angle Pb Pc P(c+1)$ formed by the reference vertex Pb, and the vertexes Pc and P(c+1) is smaller than 180 degrees,

selects, in addition to ~~said the~~ the reference vertex Pb and ~~said the~~ the vertex P(c+1), a vertex P(c+2) which ~~is positions~~ positioned adjacent to the vertex P(c+1) in ~~said the~~ the forward direction, and a triangle $\triangle Pb P(c+1) P(c+2)$ formed by the reference vertex Pb, and the vertexes P(c+1) and P(c+2) carries no other vertex Pj (j = 1, 2, ..., n, and $j \neq b, j \neq c, j \neq c+1, j \neq c+2$) which belongs to ~~said the~~ the polygon and not yet selected, and an angle $\angle Pb P(c+1) P(c+2)$ formed by the reference vertex Pb, and the vertexes P(c+1) and P(c+2) is smaller than 180 degrees, and

generates the partial polygon data specifying at least the partial polygon formed by ~~said the~~ the reference vertex Pb, and the vertexes Pc, P(c+1), and P(c+2).

6. (Currently Amended) The polygon rendering device according to claim 5, wherein said polygon division section

sets, when the vertex $P(c+2)$ selected thereby satisfies a condition that ~~said the~~ triangle $\triangle P_b P(c+1) P(c+2)$ carries, in and on, no other vertex P_j , and ~~said the~~ angle $\angle P_b P(c+1) P(c+2)$ is smaller than 180 degrees, ~~said the~~ vertex $P(c+2)$ as the vertex $P(c+1)$,

keeps selecting, until ~~said the~~ condition is ~~not no longer~~ satisfied ~~any more~~, together with ~~said the~~ reference vertex P_b and the newly-set vertex $P(c+1)$, a new vertex $P(c+2)$ which ~~is positions~~ positioned adjacent to the newly set vertex $P(c+1)$, and

generates the partial polygon data which specifies the partial polygon formed by ~~said the~~ reference vertex P_b , ~~said the~~ vertexes P_c and $P(c+1)$, and at least one of the vertexes $P(c+2)$.

7. (Currently Amended) A polygon rendering method, comprising:

a polygon division ~~step operation~~ of generating, based on polygon data which specifies a polygon to be rendered, a plurality of partial polygon data each specifying one piece of partial polygons which are obtained by dividing the polygon; and

a partial polygon rendering ~~step operation~~ of performing a rendering process, and based on the partial polygon data generated in said polygon division ~~step operation~~, generating image data which represents an image of the polygon, wherein

each of ~~said the~~ partial polygons includes a plurality of triangles which respectively include a vertex of ~~said the~~ polygon, and

each of the triangles shares at least one edge with ~~any at least one of the triangles~~ other triangle included in the same partial polygon.

8. (Currently Amended) The polygon rendering method according to claim 7, wherein

~~said the~~ polygon data includes n sets of vertex coordinates P_1 to P_n of ~~said the~~ polygon in such an order that the polygon can be rendered in one stroke in a forward direction,

said polygon division ~~step operation~~

includes a first selection-step operation of selecting one of the vertex coordinates P_1 to P_n of ~~said~~ the polygon data as a reference vertex P_b ($b=1, 2, \dots, n$), and ~~in-said~~ the forward direction, selecting a vertex P_c ~~positioning~~ positioned adjacent to the reference vertex P_b and a vertex $P_{(c+1)}$ ~~positioning~~ positioned adjacent to the vertex P_c , ~~and in-said first selection-step~~, a triangle $\triangle P_b P_c P_{(c+1)}$ formed by the reference vertex P_b , and the vertexes P_c and $P_{(c+1)}$ carries, in and on, no other vertex P_i ($i = 1, 2, \dots, n$, and $i \neq b, i \neq c, i \neq c+1$) belonging to ~~said~~ the polygon and not yet selected, and an angle $\angle P_b P_c P_{(c+1)}$ formed by the reference vertex P_b , and the vertexes P_c and $P_{(c+1)}$ is smaller than 180 degrees, and

includes a second selection-step operation of selecting, in addition to ~~said~~ the reference vertex P_b and ~~said~~ the vertex $P_{(c+1)}$, a vertex $P_{(c+2)}$ which ~~is~~ positions positioned adjacent to the vertex $P_{(c+1)}$ in ~~said~~ the forward direction, ~~and in-said second selection-step~~, a triangle $\triangle P_b P_{(c+1)} P_{(c+2)}$ formed by the reference vertex P_b , and the vertexes $P_{(c+1)}$ and $P_{(c+2)}$ carries no other vertex P_j ($j = 1, 2, \dots, n$, and $j \neq b, j \neq c, j \neq c+1, j \neq c+2$) which belongs to ~~said~~ the polygon and not yet selected, and an angle $\angle P_b P_{(c+1)} P_{(c+2)}$ formed by the reference vertex P_b , and the vertexes $P_{(c+1)}$ and $P_{(c+2)}$ is smaller than 180 degrees, and

said polygon division-step operation generates the partial polygon data specifying at least the partial polygon formed by ~~said~~ the reference vertex P_b , and the vertexes P_c , and $P_{(c+1)}$ selected in said first selection-step operation, and ~~said~~ the vertex $P_{(c+2)}$ selected in said second-step selection operation.

9. **(Currently Amended)** The polygon rendering method according to claim 8, wherein said polygon division-step operation further includes a setting-step operation of setting ~~said~~ the vertex $P_{(c+2)}$ to the vertex $P_{(c+1)}$ when the vertex $P_{(c+2)}$ selected in said second selection-step operation satisfies a condition that ~~said~~ the triangle $\triangle P_b P_{(c+1)} P_{(c+2)}$ carries, in and on, no other vertex P_j , and ~~said~~ the angle $\angle P_b P_{(c+1)} P_{(c+2)}$ is smaller than 180 degrees,

said second selection-step operation keeps selecting, until ~~said~~ the condition is ~~not~~ no longer satisfied ~~any more~~, together with ~~said~~ the reference vertex P_b selected in said

first selection-step operation, and ~~said the~~ vertex P(c+1) newly set in said setting-step operation, a new vertex P(c+2) which is positionspositioned adjacent to the newly-set vertex P(c+1), and

said polygon division-step operation generates the partial polygon data which specifies the partial polygon formed by ~~said the~~ reference vertex Pb, and ~~said the~~ vertexes Pc and P(C+1) selected in said first selection-step operation, and the vertex P(c+2) selected in said second selection-step operation.

10. (Currently Amended) A polygon rendering program operable to instruct a processor to render a polygon, the polygon rendering program comprising:

a polygon division-step operation of generating, based on polygon data which specifies a polygon to be rendered, a plurality of partial polygon data each specifying one piece of partial polygons which are obtained by dividing the polygon; and

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Cm+ a partial polygon rendering-step operation of performing a rendering process, and based on the partial polygon data generated in said polygon division-step operation, generating image data which represents an image of the polygon, wherein

each of ~~said the~~ partial polygons includes a plurality of triangles which respectively include a vertex of ~~said the~~ polygon, and

each of the triangles shares at least one edge with any at least one of the triangles other triangle included in the same partial polygon.

11. (Currently Amended) The polygon rendering program according to claim 10, wherein

~~said the~~ polygon data includes n sets of vertex coordinates P1 to Pn of ~~said the~~ polygon in such an order that the polygon can be rendered in one stroke in a forward direction,

said polygon division-step operation

includes a first selection-step operation of selecting one of the vertex coordinates P1 to Pn of ~~said the~~ polygon data as a reference vertex Pb (b=1, 2, ..., n), and in ~~said the~~ forward direction, selecting a vertex Pc positioning positioned adjacent to the reference vertex Pb and a vertex P(c+1) positioning positioned adjacent to the vertex Pc,

~~and in said first selection step, a triangle $\triangle P_b P_c P(c+1)$ formed by the reference vertex P_b , and the vertexes P_c and $P(c+1)$ carries, in and on, no other vertex P_i ($i = 1, 2, \dots, n$, and $i \neq b, i \neq c, i \neq c+1$) belonging to said the polygon and not yet selected, and an angle $\angle P_b P_c P(c+1)$ formed by the reference vertex P_b , and the vertexes P_c and $P(c+1)$ is smaller than 180 degrees, and~~

~~includes a second selection-step operation of selecting, in addition to said the reference vertex P_b and said the vertex $P(c+1)$, a vertex $P(c+2)$ which is ~~positions~~ positioned adjacent to the vertex $P(c+1)$ in said the forward direction, and in said second selection step, a triangle $\triangle P_b P(c+1) P(c+2)$ formed by the reference vertex P_b , and the vertexes $P(c+1)$ and $P(c+2)$ carries no other vertex P_j ($j = 1, 2, \dots, n$, and $j \neq b, j \neq c, j \neq c+1, j \neq c+2$) which belongs to said the polygon and not yet selected, and an angle $\angle P_b P(c+1) P(c+2)$ formed by the reference vertex P_b , and the vertexes $P(c+1)$ and $P(c+2)$ is smaller than 180 degrees, and~~

~~said polygon division-step operation generates the partial polygon data specifying at least the partial polygon formed by said the reference vertex P_b , and the vertexes P_c , and $P(c+1)$ selected in said first selection-step operation, and said the vertex $P(c+2)$ selected in said second-step selection operation.~~

12. **(Currently Amended)** The polygon rendering program according to claim 10, wherein

~~said polygon division-step operation further includes a setting-step operation of setting said the vertex $P(c+2)$ to the vertex $P(c+1)$ when the vertex $P(c+2)$ selected in said second selection-step operation satisfies a condition that said the triangle $\triangle P_b P(c+1) P(c+2)$ carries, in and on, no other vertex P_j , and said the angle $\angle P_b P(c+1) P(c+2)$ is smaller than 180 degrees,~~

~~said second selection-step operation keeps selecting, until said the condition is not no longer satisfied any more, together with said the reference vertex P_b selected in said first selection-step operation, and said the vertex $P(c+1)$ newly set in said second selection-step operation, a new vertex $P(c+2)$ which is ~~positions~~ positioned adjacent to the newly set vertex $P(c+1)$, and~~

said polygon division-step operation generates the partial polygon data which specifies the partial polygon formed by ~~said~~ the reference vertex P_b , and ~~said~~ the vertexes P_c and $P(C+1)$ selected in said first selection-step operation, and the vertex $P(c+2)$ selected in said second selection-step operation.

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